Brookhaven National Laboratory

U.S. DEPARTMENT OF ENERGY

TAKE FIVE for Safety
Recent Event

Frank Craner

August 27, 2024

@BrookhavenLab

Unknown Failure of AGS Tune Meter Kicker

SCBNL: E-01928 **Date: 22 August 2024**

Description & Categorization Level: On August 16, 2024, around 6pm, repairs on the AGS tune-meter were completed and final tests were being performed in Building 913A known as the AGS A10 house. The power supplies were closed and placed in an operational state. After handover to the control room for final tests, the reference voltage on the AGS tune-meter jumped and two loud bangs were heard near the power supply. There was no chance for electrical exposure as the power supply cabinets were closed. The power supplies were then placed under LOTO and visually inspected. No obvious damage was found and initial tests suggest a malfunctioning relay. After consulting with supervision, the decision was made to pause work for the weekend, deenergize the systems, and regroup Monday morning. All procedures and safety requirements were properly in place and there was no possibility of personal injury. There are no injuries associated with this event.

Potential Cause(s): When replacing the charging power supply, a voltage divider circuit was not reinstalled in the controls, changing the calibration of the remote reference. This commanded the supply to charge up to more than double the required voltage. The air insulation broke down at ~27 kV.

Immediate/Containment Actions:

Supply was LOTO'd and put into an electrically safe condition. After a review by Laboratory safety, trouble shooting of the supply began.

Point of Contact: Kevin Hughes

The “Event”

- Equipment Breakdown
- Intricate, High Voltage (40kV) equipment, estimated about 30 years old
- “Event” starts with Loud Bangs, preceded by crackling noise.
- Unknown (at the time) cause, and degree of hazard.

Work Planning in Relation to Hazard ID and Mitigation

- Need to diagnose a complex equipment problem
- High Voltage!
- Noise indicates arcing?
- Unknown Condition inside Power Supply cabinet
- Time Pressure to react quickly
- Decision made to pause work and reevaluate

- Safe Work Practices followed-
  - Closure of equipment before testing
  - Careful and deliberate planning for diagnostic work including LOTO, maintaining safe distances, and ensuring full equipment protection before reenergizing at high voltage.

Event Reporting and Learning Opportunities

(Many) Things that went right-

- Work Planning Process used to plan response
- Work was planned and performed safely with documented plans
- Healthy respect for what could go wrong demonstrated
- Key safety points- work was performed under LOTO, and planning ensured that HV containing cabinet was closed before energizing

Why SCBNL?

- What can we (C-AD) learn regarding the safety of our equipment?
- In Safety, the Event represents a “close call”– How close?